UNITED STATES POSTAL SERVICE
OFFICE OF INSPECTOR GENERAL

YEAR 2000 INITIATIVE:

STATUS OF THE RENOVATION, VALIDATION AND IMPLEMENTATION PHASES

July 21, 1998

Audit Report Number IS-AR-98-002

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July 21, 1998

MICHAEL S. COUGHLIN
Deputy Postmaster General

SUBJECT: **Year 2000 Initiative (IS-AR-98-002)**

This report presents the results of our review of the USPS Year 2000 (Y2K) Initiative. This report is the second in a series dealing with the Y2K initiative. During this review we noted that executive operating systems were not always compliant, application remediation was not effectively challenged, systems were not effectively tested for Y2K compliance, and application status reporting was inaccurate. Management agreed with our findings and recommendations. The corrective actions taken or planned are responsive to the issues raised in our report.

The cooperation and courtesies provided by your staff during the audit were appreciated.

Karla W. Corcoran

Attachment

cc: Thomas J. Koerber
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USPS YEAR 2000 INITIATIVE: STATUS OF THE RENOVATION, VALIDATION AND IMPLEMENTATION PHASES

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EXECUTIVE SUMMARY

Results in brief

The year 2000 (Y2K) problem results from the way in which computer systems store and process dates. In many systems, the year 2000 will be indistinguishable from 1900, thereby causing potential system failures. If left uncorrected, we believe the United States Postal Service (USPS) could face critical computer system failures, which may hinder mail movement.

Due to the critical implications of the Y2K issue, we are providing continuous audit coverage to the area. Since many of the issues are "time sensitive," we plan to issue interim reports to management officials that include assessments of ongoing efforts as well as recommendations for corrective actions when warranted. This report is the second we have issued on the Y2K initiative. Our first report[1] addressed the "Awareness" and "Assessment" phases of the USPS Y2K initiative. This report provides a preliminary assessment of the "Renovation," "Validation," and "Implementation" phases."

Since our previous report, USPS officials have made progress on the Y2K challenge. Despite this progress; however, there are significant Y2K issues facing the USPS that warrant further attention. Our current review disclosed:

- executive operating systems were not always Y2K compliant;
- non-critical application remediation was not effectively challenged;
- applications in production were not always tested; and
- application status was not reported accurately.

Taking timely action to correct these problems should minimize or eliminate potential disruptions in USPS service resulting from non Y2K compliant systems.

As we stated in our first report, we believe the Y2K project is at least a year behind schedule for a successful Y2K conversion. As a result, the USPS had not performed enough work for us to complete a thorough assessment of the "Renovation," "Validation," and "Implementation" phases. However, we felt it was necessary to provide management with a current assessment as they continue working on the Y2K problem.

[1] Year 2000 Initiative, USPS Office of Inspector General, IS-AR-98-001, March 31, 1998.

Recommendations	The Deputy Postmaster General should direct appropriate USPS personnel to: **Recommendation (1)** use a compliant executive operating system software release, **Recommendation (2)** apply the USPS Y2K guideline of challenging the need for each existing component or application at the completion of the BIAs, **Recommendation (3)** develop procedures to hold USPS managers and operations personnel accountable for application testing[2], and **Recommendation (4)** report applications as Y2K compliant only if they have been thoroughly tested for compliance.
Management Comments	The Deputy Postmaster General concurred with all findings and recommendations included in this report and provided the following general statement: *"During the last few months the USPS YEAR 2000 Project Management Office has made major progress toward engaging USPS executives in accomplishing the YEAR 2000 challenge. For example, business impact assessments (BIAs) have been completed for each major business area. These assessments have become instrumental in helping management focus on the most critical YEAR 2000 issues. In addition, applications have been prioritized and grouped into an initial set of releases according to function and failure date. Responses to specific recommendations will reflect the results of these activities. The YEAR 2000 initiative is a critical project for the Postal Service*." See Appendix II for comments on each recommendation.
Evaluation of Management Comments	Management's planned and completed actions are responsive to the issues raised in this report.

INTRODUCTION

The year 2000 (Y2K) problem results from the way dates are recorded and computed in many computer systems. For the past several decades, systems have typically used two digits to represent the year, such as “98” representing 1998, in order to conserve on electronic data storage and reduce operating costs. With this two digit date format; however, the year 2000 is indistinguishable from 1900, 2001 from 1901, and so on. As a result of this ambiguity, system or application programs that use dates to perform calculations, comparisons, or sorting may generate incorrect results when working with years after 1999.

[2] Corrective action began during our review to hold appropriate personnel responsible for application testing.

In light of the critical challenge facing the USPS, The Deputy Postmaster General requested that we review USPS actions to achieve Y2K information systems compliance. This report reflects the results of our ongoing Y2K review. This is the second in a series of reports designed to offer our assessment as well as recommendations to USPS management.

The USPS depends on information systems to perform a variety of critical tasks. The USPS manages over 600 systems applications related to internal and external operations. The systems applications encompass a wide variety of platform designs, operating systems, and programming languages. As a system-dependent organization, the USPS is highly susceptible to the Y2K problem.

To effectively manage the Y2K challenge, the USPS established a Project Management Office (PMO). As noted in our previous report on the Y2K initiative, the PMO has been aggressively addressing many of the Y2K challenges facing the USPS[3]. Since our previous report, the PMO has established and implemented an organization wide Business Impact Assessment (BIA) and Post Implementation Verification (PIV) process. In addition, the PMO has developed a rough order of magnitude for Y2K costs and a framework for Y2K accountability. Despite this progress, there are significant issues facing the USPS Y2K initiative that warrant further attention.

Five phases are widely accepted by federal and private entities for completing a Y2K conversion[4].

Awareness
Assessment
Renovation
Validation
Implementation

Our first report addressed the awareness and assessment phases. This report represents a preliminary review of USPS progress in the renovation, validation and implementation phases. Each phase is addressed separately below.

Objective

Our overall objective was to determine whether the USPS was taking effective actions to achieve Y2K compliance.

[3] Year 2000 Initiative, USPS Office of Inspector General, IS-AR-98-001, March 31, 1998.
[4] A diagram outlining the five phases as well as time-line for their completion is provided at Appendix 1.

Scope

In assessing the actions taken by USPS during the renovation, validation and implementation phases, we reviewed numerous documents, including individual system summary and detailed plans, system inventories, test plans, and schedules. We also analyzed internal tracking reports developed by the PMO to monitor the progress of Y2K activities. In addition, we performed a limited review of operating systems used at Integrated Business Systems Solutions Centers (IBSSC), and reviewed a limited sample of applications to determine the extent of Y2K testing.

We discussed USPS Y2K activities related to this report with officials in various headquarters offices, including the Y2K project manager, contracted PMO personnel, and several application program mangers at the IBSSCs.

Methodology

The General Accounting Office (GAO) has issued an assessment guide for use by both the private and public sector in evaluating Y2K compliance projects. The GAO Year 2000 Assessment Guide identifies five phases of a Y2K conversion. (See Appendix I) We used the GAO Year 2000 Assessment Guide in evaluating USPS readiness to achieve Y2K compliance.

We conducted our review from January through May 1998 and reviewed documentation processed through April 1998. This review was conducted in accordance with generally accepted government auditing standards.

RENOVATION

Background

After an organization completes the "Awareness" and "Assessment" phases of a Y2K initiative, the third phase (renovation--conversion, replacement, retirement) must be undertaken. In this phase, operating officials should make and document required software and hardware changes, develop replacement systems, and decommission retired systems.

It becomes a business decision to upgrade software of old applications that have been operating accurately for an extended period. It is not cost effective to upgrade for the sake of upgrading. However, for systems to run correctly into the next millennium, all software must be Y2K compliant. The operating system is the foundation for running applications. Year 2000 compliant applications will not function if operating systems are non-compliant. The USPS uses MVS as the primary operating system in its mainframe environment. In conjunction with MVS, the USPS uses an executive operating system Customer Information Control System (CICS) for running most mainframe applications.

Results

Executive operating systems not always compliant

The USPS was not using a Y2K compliant version of the executive operating system software CICS. This occurred because IBSSC personnel had just obtained a compliant version at the time of our review. Also, the need to upgrade software to a compliant version had not been enforced. As a result, Y2K problems may surface even if individual applications are remediated.

The Y2K compliant version of CICS is release 4.X. As of March 10, 1998, at least 50 of 215 IBSSC applications[5] were using a non-compliant version of CICS (release 2.1). In addition, 42 of the 50 applications were classified as "critical" by IBSSC personnel.

[5] During our review, USPS personnel began corrective action to upgrade executive operating systems to CICS 4.X. However, the applications using CICS had not been recompiled.

Application remediation not effectively challenged

USPS operating officials did not effectively challenge the need to perform Y2K remediation on all existing applications. This occurred because Business Impact Assessments (BIA) had not been completed to allow officials to challenge the need for existing applications. As a result, resources (i.e. time and personnel) could be better spent remediating more critical applications.

Before applications are remediated, a business impact assessment (BIA) should be performed. At the time of our review the Y2K PMO and USPS officials started but had not completed the BIA process. During the BIA, applications are classified by operating officials as (1) severe, (2) critical, or (3) non-critical/important. The guiding principle that USPS officials should apply in making such a determination is to "challenge the need for each existing component or application." The USPS intends to remediate more than 600 severe, critical, and non-critical/important applications by December 1999 at an estimated cost of approximately $675 million.[6] These classifications were determined by cross functional team members, system program managers, and IBSSC representatives. Thirty-seven percent of the applications identified were classified as non-critical. We believe that it may not be cost effective to convert many of the non-critical systems.

[6] According to the March 1, 1998 PMO Y2K inventory, there were 625 systems slated for remediation. Of these, 232 (37%) were classified as noncritical.

VALIDATION

Background

After code modification is performed during renovation, remediated applications should be thoroughly tested by operating officials to ensure that they are Y2K compliant and operate as they did before modifications. The USPS PMO has designed an additional check in the Y2K process called Post Implementation Verification (PIV) to supplement the validation phase. The PIV is an independent review of an application prior to its return to production. Due to the wide disbursement of applications and decentralized nature of the USPS, the PIV will be vital to ensure Y2K compliance.

Results

Systems not effectively tested for Y2K compliance

Systems that were in production or in acceptance testing were not always tested to ensure Y2K compliance. This occurred for the following reasons:

- Procedures were not adequately enforced to hold USPS managers and operations personnel accountable for application testing.
- IBSSC program managers stated that they were relying on the Y2K project office PIV team to perform system testing. However, it is the responsibility of operating officials to perform testing. The PIV is only a check to determine whether testing was completed.

As a result, some applications may not be Y2K compliant and may adversely affect the related USPS missions.

We reviewed 40 applications reported by the IBSSC program managers as "in production" or "in acceptance testing" per the March 1998 PMO system inventory. Our review disclosed that 10 (25%) of the applications had not been tested by program managers in accordance with the USPS Y2K Management Instruction AS-840-98-1. The PMO relies on the IBSSC program managers and portfolio mangers for accurate reporting of system status.

IMPLEMENTATION

Background

After non-compliant systems have been converted and tested, the implementation phase of a Y2K initiative begins. During the implementation phase, extensive integration and acceptance testing is required to ensure that all converted or replaced system applications and components perform adequately.

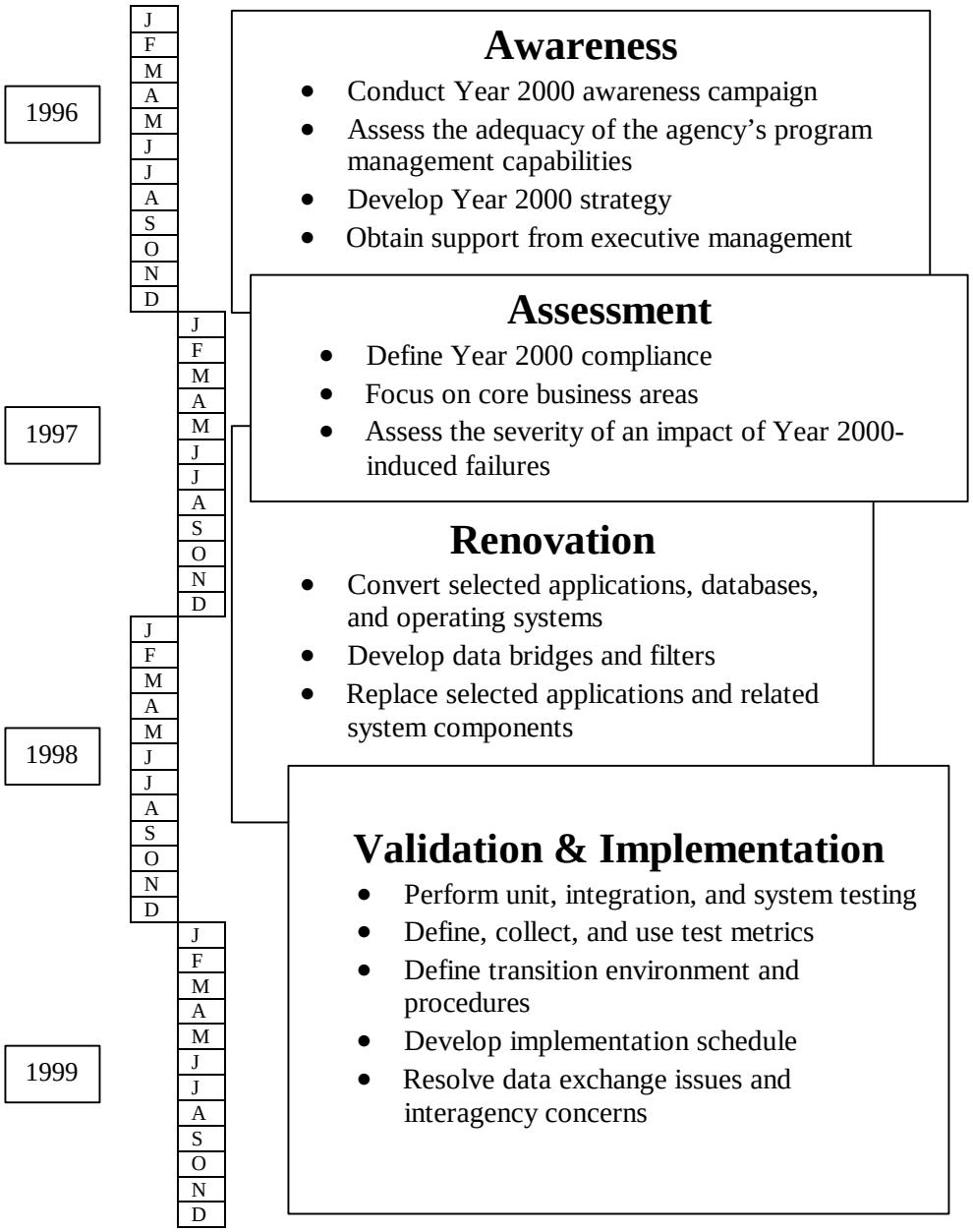
Results

Inaccurate Application Status Reporting

IBSSC personnel incorrectly reported that "in production" applications were Y2K compliant. This occurred because USPS Y2K compliance criteria and the PIV process had not been firmly established until many applications were reported as "in production." As a result, applications incorrectly reported as compliant may fail.

On March 2, 1998 PMO personnel reported to the Audit Committee (based on information received from IBSSC personnel) that approximately 96 USPS applications located at IBSSCs were in production and assumed to be compliant. However, based on our discussions with IBSSC representatives on March 9 and 10, 1998, 93 (97%) of those "in production" applications were not ready to be independently tested for Y2K compliance. Therefore, the status of applications in production and reported as compliant had not been validated.

Year 2000 Phases



MANAGEMENT COMMENTS

MICHAEL S. COUGHLIN
DEPUTY POSTMASTER GENERAL

UNITED STATES POSTAL SERVICE

July 6, 1998

BILLY J. SAULS

SUBJECT: Transmittal of Audit Report-Year 2000 Initiative: Status of Renovation, Validation, and Implementation Phases (IS-AR-98-002)

Attached is our response to your draft report, subject as above. If you have any questions or need additional information, please contact Richard D. Weirich at 202-268-6900.

Michael S. Coughlin

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U.S. Postal Service Year 2000 Initiative, IS-AR-98-002

Management Comments

General Comments: During the last few months the USPS YEAR 2000 Project Management Office has made major progress toward engaging USPS executives in accomplishing the YEAR 2000 challenge. For example, business impact assessments (BIAs) have been completed for each major business area. These assessments have become instrumental in helping management focus on the most critical YEAR 2000 issues. In addition, applications have been prioritized and grouped into an initial set of releases according to function and failure date. Responses to specific recommendations will reflect the results of these activities. The Year 2000 Initiative is a critical project for the Postal Service.

Issue 1: Executive operating systems not always compliant

The Deputy Postmaster General should direct appropriate USPS personnel to:

Recommendation (1): use a compliant executive operating system software release.

USPS Comments: *Concur.* Integrated Business Systems Solutions Center (IBSSC) personnel have obtained a compliant version of CICS and have begun upgrading their systems and applications accordingly. Estimated completion is dependent on the release schedule, system failure dates, and criticality.

Issue 2: Application remediation not effectively challenged

The Deputy Postmaster General should direct appropriate USPS personnel to:

Recommendation (2): apply the USPS Year 2000 guideline of challenging the need for [the remediation of] each existing component or application at the completion of the BIAs.

USPS Comments: *Concur.* During the review, Postal Service executives became engaged in performing business impact assessments. The Year 2000 PMO leads Postal Service executives in determining the criticality of their systems. At the time this report was received for comment, four Postal Service business areas had completed an assessment of severe and critical applications (nine applications selected for retirement or retired). Business areas just completed an assessment of their noncritical applications (the PMO stressed the Year 2000 guideline of challenging the need for each component or application). The estimated completion date of the BIA process and formal sign off is June 30, 1998.

Issue 3: Systems not effectively tested for Year 2000 compliance

The Deputy Postmaster General should direct appropriate USPS personnel to:

Recommendation (3): develop procedures to hold USPS managers and operations personnel accountable for application testing.

USPS Comments: *Concur*. It is the responsibility of USPS managers to certify all remediated components as tested and compliant. (The Post Implementation Verification (PIV) process has helped the PMO determine the need for more effective testing and better testing documentation.) To help strengthen the testing phase, the YEAR 2000 PMO has initiated an accountability process and standards that requires business area portfolio managers to certify applications after they have been remediated. PIV remains a key PMO-initiated quality control mechanism and an additional means of verifying compliance. Completed.

Issue 4: Inaccurate Application Status Reporting

The Deputy Postmaster General should direct appropriate USPS personnel to:

Recommendation (4): report applications as YEAR 2000 compliant only if they have been thoroughly tested for compliance.

USPS Comments: *Concur*. During the time of the review, business areas were still completing business impact assessments. Also, operating personnel were learning what was required to successfully complete testing. As a result, the Year 2000 PMO recognized that applications might have been mis-categorized. Therefore, a new category (rework) was developed and 100 applications, previously listed as in-production, were placed in this new category. The Year 2000 PMO will request business areas to only report applications as compliant if they have been thoroughly tested for compliance. Estimated completion date is July 31, 1998.

Major Contributors to this report were